Technical specification for Auditorium, LPSC Bengaluru

1	Indoor active LED video wall with mounting structure and controller – 1 No.	
S.N.	**Description**	**Specification**
1	Pixel pitch	1.88mm or less
2	Pixel matrix (Width x Height)	3200 x1800 or higher
3	Display dimensions (Width x Height)	6.0 Meter x 3.3 Meter or more
4	Pixel configuration	3 in 1 configuration or 4 in 1 configuration
5	LED Packaging	SMD or COB or Flip-Chip or latest
6	LED Life time	1,00,000 hours(with50%Brightness)or higher
7	Aspect ratio	16:9
8	Brightness	600 nits or better
9	Contrast ratio	5000:1 or better
10	Viewing angle	140 x 140 or better
11	Display colours	14 bit or better
12	Refresh rate	3840 Hz or better
13	HDR support (HDR 10 or HDR10+or Higher)	Yes
14	Cabinet material	Die-cast Aluminium
15	Service access	Front
16	IP rating	IP20 or better
17	Mounting type	Floor mounting
18	Power input	230V at 50 Hz
19	Operating temperature	0 to 40 degree Celsius or better
20	Operating humidity	20% to 75% or better
21	Certifications / Regulatory	BIS/ ISO certifications if available
22	10% additional video wall panels as spare cabinets with tiles to be supplied	Yes
	LED video wall controller	
S.N.	**Description**	**Specification**
1	Input	4 nos. or more (including HDMI 2.0 or better – 3 nos.)
2	Output (Gigabit Ethernet)	16 nos. or as per the requirement to support the resolution 3200 x1800 or higher with HDR
3	Control port (Ethernet)	1 no. or more
4	HDCP Support	Yes
5	Input resolution Supported	3840 x 2160 @60 Hz or better
6	Pixel capacity	3200 (H) x 1800 (V) or better
7	Licensing	All software and firmware licenses must be perpetualand must be operational from Day1
8	Mounting Type	19 inch rack mountable
9	Power input	230V at 50 Hz.
10	Operating temperature	0 to 40 degree Celsius or better
11	Operating humidity	20% to 75% or better
12	The LED controller unit should be compatible with the LED cabinet/tiles	Yes

2	LED video wall processor – 1 No.	
S.N.	Description	Specification
1	Input (HDMI 2.0 or better)	4 nos. or more
2	Output (HDMI 2.0 or better)	4 nos. or more
3	Drag & Drop, resize of input sources on any location of the video wall in real time.	Yes
4	Built –in- Scaler	Yes
5	All outputs to be individual	yes
6	HDR support (HDR 10 or HDR 10+ or better)	Yes
7	Control port (Ethernet port)	1 no. or more
8	HDCP Support	Yes
9	Input resolution Supported	3840 x 2160 @60 Hz or better
10	Licensing	All software and firmware licenses must be perpetual and must be operational fromDay 1
11	Mount	19 inch rack mountable
12	Power input	230V at 50 Hz.
13	Operating temperature	0 to 40 degree Celsius or better
14	Operating humidity	20% to 75% or better

3	55 inch professional display – 2 Nos.	
S.N.	Description	Specification
1	Technology	LED
2	Screen size (Diagonal) Minimum	55 inches (137cm-142cm range) or better
3	Resolution (Pixels) Minimum	(3840x2160) UHD
4	Panel technologies	IPS/VA
5	Aspect Ratio	16:9
6	Brightness Nits (Minimum)	500 or better
7	Viewing angle	178:178
8	Mounting	For both displays,Wall mount & tiltable floor mount to be provided.Tiltable floor mount to be positioned on the dias for the VIPS seated
9	Connectivity	HDMI port (2 Nos), Audio, USB port
10	Ethernet port	Yes

4	Monitor 27 inches – 2 Nos.	
S.N.	Description	Specification
1	Technology	LED
2	Type	Bezel less or frame les or slim Bezel
3	Display Technology	IPS / VA
4	Screen size (diagonal)	27 inches (65cm to 70cm) or more
5	Resolution (pixels)	1920 x 1080 or better
6	Aspect ratio	16:9
7	Brightness Nits	250 or better
8	Viewing Angle	178:178
9	HDMI port	1 or more

5	PTZ Camera – 4+1 Nos.	
S.N.	Description	Specification
1	Camera Sensor:	1/2.8" to 1/2.5" CMOS
2	Resolution	1080p at 60 fps or better
3	Optical Zoom	30 x or better
4	Horizontal angle of view / FOV	60 degrees or better
5	Horizontal rotation range	270 degrees
6	Vertical rotation range	+90° to -30°
7	Image flip supported	Yes
8	Backlight compensation	Supported
9	White balance	Yes
10	Digital noise reduction	Yes
11	Preset Positions	50 Nos better
12	Remote control	Yes
13	No. of HDMI ports	1 or more
14	No. of SDI ports	1 or more
15	No. of RJ-45 ports	1 or more
16	PoE supported	Yes
17	Necessary DC power adapter and mounting kit included	Yes

6	Camera mounting kit- roof / wall mount type – 5 Nos.	
S.N.	Description	Specification
1	A suitable height adjustable Ceiling / wall mount MS with powder coated stand shall be provided for the PTZ camera. (For the above Item no:5, Ceiling mounting kit - 2 Nos , Wall mounting kit -3 Nos)	Yes

7	Podium – 1 No.	
S.N.	Description	Specification
1	Aluminium finish powder coated podium with height adjustable upto 50 cm , four caster wheels & lock to arrest the podium movement. Refer dimension drawing-4	Yes
2	Provision & supply of 21 to 23 Inch Multi Touch Monitor with tilt facility upto 45 deg as per user height with control switch (Motorised Tilt).	Yes
3	Provision to view laptop output in multi touch monitor and video wall simultaneously	yes
4	Ports available– 2nos XLR on the podium to connect mics, 2 nos HDMI, 2 nos USB, 4 nos RJ-45, 3.5mmjack & Power sockets – 5 nos for laptop, monitor etc.,	Yes
5	Batteryless stylus Pen for touch monitor	Yes
6	Small foldable tray on one side to keep Laptop while using touch monitor.	Yes

7	Provision for 2Nos of 24inch Gooseneck mic with ON/Off Button	Yes
8	AC 220V, 50Hz power operation	Yes

8	Laptop – 1 Nos.	
S.N.	Description	Specification
	Processor	
1	No. of cores per processor	4 or more
2	Processor base frequency	1.6 GHz or better
3	Operating system	Windows 11 Professional
4	Microsoft office version 2021 or higher with perpetual license	Yes
5	Cache memory	18 MB or better
	Memory	
6	Type of RAM	DDR4 or better
7	RAM size	16 GB or more
8	No. of DIMM slots available	2 or more
9	No. of DIMM slots populated	1 number
	Storage	
10	Type of drives used to populate internal bays	SSD
11	Total SSD capacity	1024 GB or more
	Connectivity	
12	Type of wireless connectivity	Wi-Fi 6 : 802.11 ax or better
13	Type of Ethernet port	1 no -10/100/1000 on board integrated Gigabit Port
14	Bluetooth version	5.2 or better
	Ports	
15	No. of USB 3.0 ports	2 or more
16	No. of HDMI ports	1 or more
	Display	
17	Display size	14 inches or more
18	Display technology	LED backlit
19	Display resolution	1920 x 1080 or better
20	Resolution of webcam	HD or better
	Miscellaneous	
21	Internal speaker (Dual)	Yes
22	Headphone out	Yes
23	Keyboard type	Standard
24	Backlit keyboard	Yes
25	Type of carry case	Back pack
	Power	
26	Battery type	Integrated

9	24 inches Gooseneck microphone – 2 Nos.	
S.N.	**Description**	**Specification**
1	Type	Condenser
2	Frequency response	100Hz to 15KHz or better
3	Pickup pattern	Cardioid
4	Sensitivity	15 mV / Pa or better
5	LED indicator	Yes
6	Microphone modes	Toggle on/off Push to mute Push to talk
7	Length	24 inches

10	15 inches Gooseneck microphone – 3 Nos.	
S.N.	**Description**	**Specification**
1	Type	Condenser
2	Frequency response	100Hz to 15KHz or better
3	Pickup pattern	Cardioid
4	Sensitivity	15 mV / Pa or better
5	LED indicator	Yes
6	Microphone modes	Toggle on/off Push to mute Push to talk
7	Length	15 inches
8	Robust programable Mic button for (PTT, PTM, toggle On/off, permanent on), Bi-color status indication	Yes

11	Wireless handheld mic – 4 Nos.	
S.N.	**Description**	**Specification**
1	Type	Digital Wireless system
2	Pickup pattern	unidirectional
3	Form factor	Handheld
4	Transducer type	Condenser
5	Audio frequency response (Microphone)	100 Hz to 15 kHz or better
6	Frequency range	UHF
7	Channel / frequency selection	Yes
8	No of compatible channels in a Group	12 nos or more.
9	Power requirement	AA batteries (to be included)
10	Working range	60 m or better
11	LED indicator	Yes
12	On/off switch	Yes
13	Transmitter and receiver units	Both required
14	BNC connector for antenna extension	2 nos

12	Head worn mic – 2 Nos.	
S.N.	Description	Specification
1	Type	Digital Wireless system
2	Pickup pattern	Unidirectional
3	Form factor	Headworn
4	Transducer type	Condenser
5	Frequency response (Microphone)	80 Hz to 15 kHz or better
6	Frequency range	UHF
7	Channel / frequency selection	Yes
8	No of compatible channels in a Group	12 nos or more
9	Power requirement	AA batteries (to be included)
10	Operating range	60m or better
11	LED indicator	Yes
12	On/off switch	Yes
13	Transmitter and receiver units	Both required
14	BNC connector for antenna extension	2 nos

13	collar mic (transmitter & receiver) – 2 Nos.	
S.N.	Description	Specification
1	Type	Digital Wireless system
2	Pick-up pattern	omnidirectional
3	Form factor	Collar worn
4	Transducer Type	Condenser
5	Frequency response (Microphone)	80-15 KHz or better
6	Frequency range	UHF
7	No of compatible channels in a Group	12 nos or more
8	Channel / frequency selection	Yes
9	Power requirement	AA batteries(to be included)
10	Operating Range	60 meter or better (Line of sight)
11	LED Indicator	Yes
12	On/off Switch	Yes
13	Transmitter and receiver units	Both required
14	BNC connector for antenna extension	2 nos

14	Antenna – 2 Nos.	
S.N.	Description	Specification
1	Active Directional Antenna	Yes
2	Mounting type	Ceiling or wall mount
3	Gain Adjustment for compensating coaxial cable signal loss	Yes
4	Impedance	50 Ω
5	Connector type	BNC
6	Antenna should be compatible with the microphone receiver units specified in **item no: 11 &12 &13 and antenna Distribution system specified item no: 16**	Yes

15	Antenna cable – 2 Nos.	
S.N.	Description	Specification
1	Cable Impedance	50 Ω
2	End Connection	BNC connectors on both ends
3	Length	50mtrs, or as per the site conditions

16	Antenna Distribution system – 1 Set.	
S.N.	Description	Specification
1	Antenna Distribution support for upto 8 receivers or more	Yes
2	Two 50 ohm, BNC cascade ports for system expandability	Yes
3	RF signal amplification supported	Yes
4	Impedance	50 Ω
5	Form Factor	Rack Mount & Connection through BNC
6	Compatibility with the microphone receiver units specified in **item no: 11 &12 &13 and antenna specified in item no:14**	Yes

17	Control room monitoring speakers – 1 pair	
S.N.	Description	Specification
	Mounting Type	**Wall mount**
1	Powered Speaker (Built in amplifier)	Yes
2	LF Transducer size	6 inches or more
3	HF Transducer size	1 inches or more
4	Maximum SPL	100 dB or better
5	Frequency Range	100 Hz - 20 kHz or better
6	Amplifier Power rating	100 Watts or better

18	Analog Audio Mixer – 1 No.	
S.N.	Description	Specification
	Mixer Type	Analog
1	Number of mono channel XLR inputs	16 Nos. or more
2	Number of mono channel line inputs	16 Nos. or more
3	Number of stereo input channels	2 or more
4	Main L&R output with Fader control	Yes
5	No. of Aux outputs	4 or more
6	Gain control for mic inputs	Yes
7	Frequency response	80Hz - 15kHz or better
8	High pass filter for mic inputs	Yes
9	3 Band EQ Support	Yes
10	Built in effects processing like Delay,Reverb etc.	Yes
11	Phantom power (48V) for mic inputs	Yes
12	USB Audio in/out support	Yes
13	Mute switch with LED indicator	Yes

19	**Digital audio processor – 2 Nos.**	
S.N.	**Description**	**Specification**
1	Analog Inputs	12 Mic/Line level inputs with individual AEC processing on Phoenix / Combicon removable screw connector and selectable 48V Phantom power.
2	Analog Outputs	8 Mic/Line level outputs on Phoenix / Combicon removable screw connector.
3	Noise cancellation	Yes
4	Frequency Response	100 Hz to 15 K Hz or better
5	RS-232 serial port	Yes
6	RJ45 ethernet port	Yes
7	Network audio port (AVB/Dante/BLUlink or equivalent)	Yes
8	USB audio support	Yes
9	Both DSP Units of the Same OEM may be Cascaded to Support 24 mic / line inputs and 16 mic / line level outputs.	Yes
10	Configuration/ program file to be made available to LPSC	Yes
11	Rack mount	Yes

20	**AV over IP Encoder – 20 Nos.**	
S.N.	**Description**	**Specification**
1	Input	1 x HDMI or more
2	output	1 x RJ45 Female 1Gig support or more
3	Video Resolution supported	3840 x 2160 @ 60Hz over 1 Gbit network or better
4	Video compression	JPEG 2000 or equivalent Codec with Latency less than 25 ms
5	Analog stereo audio input	1 x HDMI, 1 x Mini Stereo Jack or more
6	USB Port to support HID	Yes
7	IR	Yes
8	RS-232	Yes
9	POE support	Yes
10	Necessary power Adapter included	Yes

21	**AV over IP Decoder – 13 Nos.**	
S.N.	**Description**	**Specification**
1	Input	1x RJ45 or more
2	Output	1x HDMI or more
3	Video Resolution supported	3840 x 2160 @ 60Hz over 1 Gbit network or better
4	Video compression	JPEG 2000 or equivalent Codec with Latency less than 25 ms
5	Analog stereo audio output	1 x HDMI, 1 x Mini Stereo Jack or more
6	USB Port to support HID	Yes
7	IR	Yes

8	RS-232	Yes
9	POE support	Yes
10	Necessary power Adapter included	Yes

22	AV Over IP Controller Appliance / software solution– 1No.	
S.N.	**Description**	**Specification**
1	Configuration, management & control of end points	Yes
2	Maximum devices supported	50 nos or more
3	No of RJ45 ports	1 no. or more (If hardware solution used)
4	Compatible AV over IP controller appliance or software solution or both for configuration management, installation, operation and control of end points specified in above sl no 20&21 to be supplied .The offered solution shall support 50 endpoint devices from day1 after installation.	Yes

23	Portable Touch Panel with Room controller – 1 set.	
S.N.	**Description**	**Specification**
(I)	**Touch panel**	
1	Display Size	10 inches or better
2	Display Resolution	1920 x 1080 or better
3	Wifi 5 (IEEE 802.11ac) standard compliance	To be Supported
4	Bluetooth 4.2 or better	To be Supported
5	Table stand with holder and necessary power adapter for charging	To be included
(II)	**Room controller**	
6	Supply of Compatible Room controller to control the entire AV system	Yes
7	Programming of the AV control system and creation of a user friendly fully customizable graphical user interface for room control operations as per the LPSC requirement	Yes
8	Provision to control the camera devices, Audio system, Display devices, Encoders, Decoders and other AV equipments using the AV controlled touch panel GUI as per the LPSC requirement. Sufficient control ports as per the requirement to be included.	yes
9	Any other equipment / devices / converters / cables / connectors / Adapters and other accessories required for the entire AV control system should be supplied and integrated with system as per LPSC requirement	yes
10	Controller program source code/configuration file should be made available to LPSC	yes

11	RJ-45 port	yes

24	Layer 2 managed AV Over IP, PoE network switch – 2 Nos.	
S.N.	Description	Specification
1	Total number of Network ports(PoE+& SFP+)	48 ports or more
2	PoE Ports / Budget	40 PoE+ (30W/port),900W Budget or better
3	No of SFP ports	4 nos. or more
4	IGMP Support	Yes
5	Jumbo Frame Support	Yes
6	Managed switch with non-blocking switching fabric	Yes
7	Web based GUI	Yes
8	VLAN support	Yes
9	LAG & Trunk feature	Yes
10	Rack mounting bracket & other accessories required for installation	Yes

25	Access point – 1 No.	
S.N.	Description	Specification
1	2.4GHz & 5 GHz Dual band Wifi support	Yes
2	IEEE 802.11ac standard compliance	Yes
3	MU-MIMO supported	Yes
4	RJ-45 port	1 no. or more
5	Necessary power adapter included	Yes

26	Streaming and recording encoder – 1 No.	
S.N.	Description	Specification
1	Video input (HDMI)	4 nos. or more
2	Video input (SDI)	1 no. or more
3	Audio input (XLR)	2 nos or more
4	Video output (HDMI)	1 no. or more
5	RJ-45 port	1 no. or more
6	SSD interface	SATA (6 Gbps) or better
7	Recording file format	MP4
8	Input resolution	1080p @60 Hz or better
9	Network feature	RTSP , RTMP/RTMPS,http
10	2.5 inch SSD (1 TB) with enclosure	2 nos

27	HDMI input to USB data convertor – 2 No.	
S.N.	Description	Specification
1	Input	1x HDMI
2	Output	1x USB 3.0
3	HDMI Loop Output	1 no. or more

4	Supported Input Video Formats	1920 x 1080p @60 or better
5	Supported Output Video Formats	1920 x 1080p @60 or better
6	Audio Input	HDMI Embedded Audio&3.5mm stereo in

28	**Wireless presentation system - 1 No.**	
S.N.	**Description**	**Specification**
1	Basic function of device	Device should enable transmission of presentation video received through Wi-Fi from client device, to its HDMI display output.
2	Maximum number of simultaneous sources on screen	2 or more
3	Resolution supported	4K @30 Hz or more
4	Wireless standards	802.11 b/g/n
5	Wireless frequency (GHz)	Both 2.4 & 5
6	No. of HDMI output ports	1 or more
7	No. of HDMI Input ports	1 or more
8	No. of USB ports	2 or more
9	No. of RJ45 ports	1 or more
10	3.5 mm audio input port	1 or more
11	3.5 mm stereo audio output port	1 or more

29	**Camera controller with Joystick – 1 No.**	
S.N.	**Description**	**Specification**
1	Control of 5 Nos. or more PTZ cameras specified in **item No:5**	Yes
2	Pan & Tilt & Zoom control	Yes
3	Joystick	Yes
4	Camera Preset supported	Yes
5	Joystick controller shall be the same brand of PTZ camera	Yes

30	**Rack – 2 Nos.**	
S.N.	**Description**	**Specification**
1	Type of Rack	Portable Rack
2	Usable height	36 U
3	Usable width	19 inches
4	Overall Width	600 mm
5	Overall Depth	600 to 800 mm
6	Mount Type	Free-Standing
7	Front glass Door	Yes
8	Removable Side Panels	Yes
9	Heavy Duty Caster Wheels	4 nos. (minimum 2 nos. with brake)
10	Secure Locks	Yes
11	Support cable entry from top or bottom	Yes
12	No. of Fan for Heat dissipation	1 or more
13	No. of Rack trays	2 or more
14	6 Outlet Power strip with 6A universal socket	3 nos. or more
15	Mounting screws and all other accessories	Yes

	required for installation	

31	**Audio, video, control cables, connectors & Accessories – 1 Lot.**	
S.N.	**Description**	**Specification**
1	Supply of required audio, video, control cables & Connectors at actuals	Yes

32	**Installation, Testing, Commissioning,Training & Documentation – 1 Lot.**	
S.N.	**Description**	**Specification**
1	Installation, testing, commissioning, training &documentation, programming, demonstration of above system with required PVC conduit, speaker wiring termination	Yes

33	**Existing audio system at Auditorium LPSCB**	
S.N.	**Description**	**Quantity**
1	At present Auditorium is equipped with Array speakers.This should be seamlessly integrated to the new AV facility.Make and model number of those are listed below. i) 12 inch 2 way constant curvature HD array speaker Make: Mackie& Model No: HDA ii) 18inch High Definition powered sub-woofer system Make:Mackie & Model No:HD 1801 iii) Active 2-way sound Reinforcement speaker system Make:Mackie&Model No:SRM 450	4nos 2nos 2nos

Note:
1) Vendor shall provide complete audio video connectivity block diagram in the quote.
2) For Sl.No10,Gooseneck mics 15 inches, inline switch/ Logicbox with required XLR connections for external switches push to ON/OFF& suitable mounting plate to be integrated on existing VIP seat handles identified in the first row of Auditorium seating area below the dias.
3) MAF is mandatory for all the items except sl no. 6,7,25, 27,28,29,30,31,32